

Are Genes Jewish?
Conceptual Ambiguities
in the New Genetic Age

David W. Belin Lecture in American Jewish Affairs

12

Presented March 16, 2005

by the

Jean and Samuel Frankel Center for Judaic Studies
The University of Michigan

B
55
34
7
005

Are Genes Jewish?
Conceptual Ambiguities
in the New Genetic Age

Susan Martha Kahn

Ann Arbor
Jean and Samuel Frankel Center for Judaic Studies
The University of Michigan
2005

Jean and Samuel Frankel Center for Judaic Studies
3032 Frieze Building, The University of Michigan 48109-1285

©2005 Regents of the University of Michigan, Jean and Samuel Frankel Center for Judaic Studies. For copyright permissions, contact the Frankel Center for Judaic Studies.

Printed in the United States of America.

Kahn, Susan Martha
Are Genes Jewish? Conceptual Ambiguities in the New Genetic Age

ISBN 1.881759.11.3

\$5.00

Foreword

The David W. Belin Lectureship in American Jewish Affairs provides an academic forum for the discussion of contemporary Jewish life in the United States. It was established in 1991 through a generous gift from the late David W. Belin of Des Moines and New York. Mr. Belin, a graduate of the College of Literature, Science, and the Arts, the Business School, and the Law School of the University of Michigan, had a distinguished career in law and public service. He also served the American Jewish community in a variety of leadership positions at the national level. It was his concern with the future of American Jewry that led him to endow this annual lectureship.

The Belin Lecturer this year is Susan Kahn, Associate Director of the Center for Middle Eastern Studies at Harvard and Lecturer in the Near Eastern Languages and Civilizations Department. Born and bred in Cambridge, Massachusetts, she studied at Harvard, receiving both her M.A. in Middle Eastern Studies and Ph.D. in Social Anthropology from Harvard University. Her book, *Reproducing Jews: A Cultural Account of Assisted Conception in Israel*, published in Fall 2000 by Duke University Press, reflects a blend of medical anthropology with a focus on the Middle East. It won a National Jewish Book Award for the year 2000, as well as the 2001 Eileen Basker Memorial Prize, awarded by the Society of Medical Anthropology for outstanding research in gender and health. Professor Kahn is a leading scholar at the intersections of gender, medical anthropology, kinship studies, Israel studies, and anthropology of the Middle East. Her innovative work includes a recent research project on the social uses of new reproductive technologies in diverse cultural contexts.

Deborah Dash Moore
Frederick G.L. Huetwell Professor of History
Director of the Jean and Samuel Frankel Center
for Judaic Studies

I. Introduction

In this paper I suggest that we are at an extraordinary moment when questions about the biological basis of Jewishness are being reformulated in terms made possible by the advent of new genetic technologies. I seek to illustrate why the notion of a biological basis for Jewishness may be regaining traction among contemporary Jews by parsing the logic and appeal of new genetic technologies in three discursive domains: population genetics, medical genetics and rabbinic discourse on reproductive technologies. It is not surprising that new genetic technologies have proven seductive to a community long preoccupied with its origins, boundaries and self-definition. For among their many possible applications, these technologies promise to trace descent scientifically, establish a community's geographic origins, identify individual probabilities for disease based on genetic heritage, and isolate reproductive genetic material so that it can be designated as Jewish for purposes of Jewish procreation.

Thinking about Jewishness in biological terms has a long and complicated history. Jewish philosophers have traditionally grappled with this issue by debating the notion of divine election. Is there something physiologically different about Jews that somehow imbues them with superior qualities and abilities — and by extension with a unique destiny among humankind? Or is Jewishness an identity that is not constituted biologically, but is rather achieved via commitment to Jewish law? In the political scientist Michael Walzer's recent collection of commentaries on the concept of "membership" we gain insight into how these debates about the biological basis for Jewishness have unfolded from Biblical times to the present.¹ In one illuminating section, Moshe Halbertal argues specifically against the medieval philosopher Judah Halevi's contention that divine election is something endowed to Jews via their descent status from Jacob. Halbertal writes:

It is . . . troubling when election is interpreted as an endowed quality of the community, rather than an achievement. If election has to do with endowed qualities, such as the natural genetic capacity for prophecy in Halevi's account, it blocks the possibility that other humans can participate in it. The connection between election and law makes chosenness an achievement, not the naturally endowed quality of a nation. This makes sense of the fact that the Jewish tradition is open to converts: there is no racial barrier to conversion; election is an open commitment.²

Halbertal's rejection of Halevi's notion of Jewish biological difference follows in the tradition of Maimonides and other Jewish luminaries. Partly because of its distinguished philosophical genealogy, and partly because of the devastating legacy of eugenics in the post-Holocaust era, the notion that Jewishness is *not* biological retains great cultural force. Nevertheless, Halevi's line of reasoning lingers in the collective Jewish imagination, perhaps particularly for Jews who live outside the Halakhic community and whose Jewishness is not the product of commitment to Jewish law. Moreover, imagining Jewishness in biological terms is reinforced by the traditional way of reckoning Jewish kinship — anyone born to a Jewish mother is automatically considered Jewish. Therefore, how is it that Jewishness cannot be biological? And yet, as Halbertal points out, Judaism is a religion that accepts converts, which suggests Jewishness is not a biological construct.

These opposing concepts of Jewishness, as both a product of kinship and a product of commitment, have always existed in dynamic tension. This tension surfaces periodically in Jewish history, invariably in popular terms that are historically specific. Certainly many Jews at the end of the 19th and early 20th century embraced then prevalent notions about eugenics and the concept of racial difference.³ In 1958, David Ben Gurion, while prime minister of Israel, sought advice from Jewish sages about the nature of Jewishness in order to draft legislation concerning the citizenship status of children born in mixed marriages in Israel. He received dozens of conflicting responses from the most eminent Jewish thinkers of the time.⁴ Clearly, ambiguity and disagreement have always been endemic to this question.

II. Population Genetics

The goal in population genetics is to trace genetic ancestry among social groups using methods developed by molecular geneticists to study DNA. In 1997, a team of researchers published an article in the prestigious scientific journal *Nature*, in which they claimed to find a so-called “Kohen gene.”⁵ The study identified six polymorphisms (differences in DNA sequences) among 188 contemporary male Jews living in three countries who self-identify as Kohens, or members of the priestly class, a social strata based on oral tradition that claims a special descent status from father to son. Researchers claim that the identification of these six polymorphisms, known as the Kohen modal haplotype confirms a distinct paternal genealogy for Jewish priests that differentiates them from the lay Jewish population.⁶ Calculations based on variation in the development of mutations among Kohens today suggests a time frame of 106 generations from the ancestral founder of the line. This dates to approximately 3,300 years ago — the approximate time of the exodus from Egypt and the generation of the Biblical Aaron. This finding is consistent with oral tradition that there is a priestly class of male Jews who have maintained their lines of descent from Aaron, the first Jewish priest. The authors of the article assert that what makes this finding particularly remarkable is that the difference is observable in both Ashkenazi and Sephardic populations, despite the long geographical separation between the two communities. Thus, a Kohen of Russian Jewish descent and a Kohen of Moroccan Jewish descent, tend to have more similar Y chromosomes than do a Russian Christian and a Moroccan Muslim. Subsequent studies have expanded on these findings, claiming to confirm that Jewish populations in various parts of the world remained relatively isolated from genetic admixture.⁷

In a related study published in May 2002 in the *American Journal of Human Genetics*, researchers examine the mitochondrial DNA of Jewish women from nine distinct diasporic Jewish communities (from Morocco to the former Soviet republic of Georgia). The authors of the study argue that the striking dissimilarities in the genetic signatures of these women suggest that diasporic Jewish communities were established when Jewish male traders from the ancient Near East intermarried with local non-Jewish women along their trade routes. Such a hypothesis could also explain why Jews tended to resemble phenotypically their non-Jewish neighbors in various settings.⁸

The problem with these kinds of studies is that mapping Y chromosomes and mitochondrial DNA will "only trace two genetic lines on a family tree in which branches double with each preceding generation," according to bioethicist Carl Elliott and anthropologist Paul Brodwin. They write:

Y chromosome tracing will connect a man to his father and not his mother, and it will connect him to only one of four grandparents, his paternal grandfather. In the same way, it will connect him to one of his eight grandparents and one of his 16 great great grandparents. Continue back in this manner for 14 generations and the man will still be connected to only one ancestor in that generation. The test will not connect him to any of the other 16, 383 ancestors in that generation to whom he is related in equal measure. . . .⁹

Connection to one ancestor traced through the male line may be a tenuous connection on which to construct a contemporary identity. Yet this kind of genetic evidence is being used increasingly to legitimate diverse claims of Jewish identity.

Such claims have been most famously made among the Lemba people of Southern Africa, whose oral tradition asserts descent from a common Jewish ancestor. The Lemba also maintain a priestly class, with descent status passed from father to son. Remarkably, population geneticists found that about half the men in a priestly Lemba family possess the Kohen modal haplotype, identified among priests in the wider Jewish population.¹⁰ It is important to point out that the Kohen modal haplotype, while widespread among Jews who profess Kohen status, is not unique to Jews. Indeed, this questions the legitimacy of basing an identity solely upon this genetic evidence. Moreover, the presence of this haplotype in the DNA of a relatively few members of the community is then used to expand claims of Jewishness for the entire group. Despite these important shortcomings, this research was touted as proof that the Lemba were genetically Jewish.

Such studies must be placed in a larger sociopolitical context where claiming a Jewish identity can have direct impact on a community's access to the rights and resources of world Jewry, whether configured in terms of citizenship rights based on Israel's Law of Return, or access to resources, as provided to remote and underserved Jewish communities by organizations like the Joint Distribution Committee. Such claims were hotly contested

when made by the Bnei Israel of Ethiopia,¹¹ or more recently by the Kuki-Chin-Mizo of Northeast India, a small group that asserts descent from the tribe of Menashe.¹²

For believers in these kind of studies, the golden age of Jewish population genetics is at hand, in which geneticists will pursue the origins of the lost Israelite tribes all around the world and allow scientific researchers to “prove” that Jewish populations of the various diaspora communities have retained their genetic identity throughout exile.

Related to these studies that look for genetic evidence to reinforce traditional claims about the historical solidarity of the Jewish community in the diaspora is an additional category of Jewish population genetics in which genes, ethnicity and religious belief are conflated with historical theories about the Middle Eastern origins of the Jews. Here, genetic studies are used not simply to prove a history of Jewish self-containment and continuity, but they are also employed to situate Jewish origins conclusively in the Middle East by proving that Ashkenazi Jews have more genetically in common with, depending on the study, Palestinians, Syrians, Lebanese, Kurds and Anatolian Turks than they do with Northern Europeans, Eastern Europeans or Russians.

Ariella Oppenheim’s recent study represents a good example of this kind of research. In it she purports not only to establish the genetic similarity of Jewish identity among various diasporic populations, but to locate conclusively the origins of these populations in the Biblical land of Israel. In her study, blood from 143 Israeli and Palestinian Muslim Arabs were compared with that of 119 Ashkenazi and Sephardic Jews, and to that of non-Jewish residents of northern Wales. Oppenheim and her team found that the Arabs are more closely related to the Jews than they are to the Welsh, indicating a more recent common ancestry. She alleges that about two thirds of Israeli Arabs and Arabs in the territories and a similar proportion of Israeli Jews are the descendants of at least three common pre-historic ancestors who lived in the Middle Neolithic period, about 8000 years ago. By documenting genetic affinity between Jews and Palestinians, such studies bolster Jewish claims of historical origins in the land of Israel.

Interestingly, population geneticists generally reject the notion that there is anything called a Jewish gene, or that such a categorization would have any merit as a unit of scientific analysis. But because they use social groups, like Jews, as proxies — whether for reproductively isolated groups, ancestral groups, geographically bounded groups, environmental groups, or

some combination of these — ample room exists to confuse genetic tests that claim authority for proving group identity with genetic tests that claim authority for proving individual identity. In other words, population geneticists deal with statistical probabilities of genetic relatedness among groups of people, not with genetic tests that prove the religious or ethnic identity of an individual person.

The confusion here is exploited by commercial companies like Family Tree DNA, founded by a Texas Jewish businessman. For \$159 and a cheek swab, the company promises to provide you with relevant information about your suggested geographic origins, possible Jewish or Cohanin ancestry, and your “deep ancestral ethnic origins.” Such tests have as much potential to corroborate identity claims as they do to disrupt them.¹³

III. Medical Genetics

Perhaps a more familiar domain in which we encounter the purported identification of Jewish genes is in the realm of genetic screening. Here genetic tests are used to identify carriers of mutations for Tay-Sachs and many other genetic diseases that seem to be more prevalent among Ashkenazi Jews. Today, routine prenatal screening now includes a checklist that asks Ashkenazi Jewish women with Ashkenazi Jewish spouses to self-identify. And once identified, a special prenatal genetic screening panel designed to screen for these genetic mutations may be administered at the patient's request and expense. This is to gauge the probability that the developing fetus may be at risk for one of the genetic diseases found to be more common among Ashkenazi Jews.

Such prenatal genetic screening has been put to very specific social uses in the ultraorthodox world. The Brooklyn-based organization Dor Yeshorim has created a database of DNA of samples taken from young ultraorthodox Jews while in high school. These samples are then cross-checked before any genetically incompatible "matches" can be made between prospective marriage partners. Through such tests, the community can be sure that prospective spouses are not carriers of the same genetic mutation, which if combined could mean that their children are more likely to be born with a devastating genetic disease. In the past twenty years, the organization has met with phenomenal success and the incidence of genetic diseases in this community has been drastically reduced. In fact, now many young men and women will not even meet on arranged dates unless the other has been screened and checked by Dor Yeshorim. Marital compatibility has been essentialized in genetic terms and biotechnology dictates marital compatibility.

Ultra-orthodox Jews are not the only ones to propose innovative uses of prenatal genetic testing. A New York based philanthropic trust recently launched a project to develop a standard battery of genetic tests that could be offered at low cost to all American Jews. This new "Jewish Genetic Project," as it is called, promises to wipe out all of the so-called Jewish genetic diseases in as few as ten years.

Ashkenazi Jews have proven to be a boon for medical genetic researchers for four primary reasons:

1. Ashkenazi Jewish populations exemplify the so-called “founder effect,” in which a population that is descended from a small handful of ancestors historically shuns intermarriage or is forcibly ghettoized, thereby maintaining genetic lineages (including disease causing mutations).
2. Ashkenazi Jewish history conforms to the theory of genetic drift or bottleneck, which occurs when a genetic mutation becomes common because the population in which it is found dwindles due to famine, war, epidemic or other event, as has happened frequently among Eastern European Jews.
3. Traditionally, Jews have been receptive to science and medicine — making them more willing and prevalent participants in medical studies and research programs.¹⁴
4. The unexpected research payoff of widespread Tay-Sachs testing in the 1970’s among Ashkenazi Jews in the United States: large batches of tissue samples from Eastern European Jews who consented to Tay-Sachs tests have been stored and have been made selectively available to genetic researchers for further study. Interestingly, these samples were obtained from individuals who had not consented to the use of their tissue for further research, which raises a host of ethical concerns.¹⁵

While the organized Jewish community in America has largely embraced prenatal genetic screenings for genetic diseases, reactions have been more mixed to medical studies that focus on possible Jewish genetic predispositions towards breast cancer, colon cancer, longevity, schizophrenia, manic depression, etc. For some, these kinds of anticipatory studies have created considerable anxiety, given the possibility that Jews could be perceived to be more prone to genetic defects than non-Jews. For many, targeting Jewish genes in this way resonates with dangerous eugenic overtones. Moreover, on an individual level, those who are identified as carriers of genetic mutations by these tests are inevitably faced with ambiguous odds of contracting diseases for which there are often no reliable cures. Nevertheless, many synagogues have organized DNA drives to gather samples to aid researchers. The American Jewish Committee, Hadassah, and other large national Jewish organizations have organized multi-day conferences and other events to educate their constituencies about the scientific

and practical issues involved in genetic screening, including the risks of insurance discrimination based on test results. These groups have also mobilized their constituents to lobby Congress to work on the state and local level to prevent genetic discrimination. Further, they have organized meetings between top officials from the National Institutes of Health and top rabbis and Jewish community leaders. Widespread public education campaigns have been launched by Jewish organizations on local, state and national levels aimed at reaching Jewish populations. These communal efforts have effectively galvanized public opinion to recognize the potential dangers inherent in population-specific genetic research and have helped to generate public debate about the myriad personal dilemmas presented by this research — including concerns about new experimental treatments for genetic diseases and their implications for individual health.¹⁶

Certainly the impulse motivating this Jewish enthusiasm for genetic screening is understandable. Prenatal genetic screening promises to make reproduction safer and better than ever before. And while genetic screening for adult-onset disease has been recognized as potentially more problematic, its promise has proven to be deeply irresistible. It would seem that Jews in many different contexts have been hopelessly seduced.

Anthropologist Margaret Lock has written that genetic testing “permits us to divine our past and to make that heritage, in the form of genes, into omens for the future.”¹⁷ She argues that these tests encourage us to concentrate on the style of reasoning known as biological reductionism or genetic determinism. This kind of thinking allows for other causes of disease due to social, political or environmental factors to be ignored. Instead, disease is understood as the product of inherited genetic predispositions, thus stigmatizing the individual while eliding the larger, perhaps dangerously unhealthy, environments in which individuals live. Following Lock’s reasoning, it would seem that by embracing genetic screening, Jews are flirting with the notion that they are the sum of their Jewish genetic parts. This dynamic is reinforced when we juxtapose it with the ways genes are perceived to be Jewish in other domains.

IV. New Reproductive Technologies

An additional discursive domain in which genes are expressly identified as Jewish or not Jewish appears in the realm of contemporary Halakhic debates about the appropriate uses of new reproductive technologies. These technologies, including artificial insemination, ovum donation and in-vitro fertilization, depend on the isolation and extraction of reproductive genetic material that is then deliberately manipulated for conception and gestation. Orthodox rabbis have been remarkably lenient in their rulings concerning the permissibility of these treatments and in thinking about their possible applications. These technologies have forced rabbis to imagine conception in starkly literal terms and to consider basic questions about where Jewishness comes from, and by extension, "who is a Jew."

We know Jewishness is transmitted by the mother, but in the age of reproductive technology this transmission becomes less straightforward: is it the mother's egg that transmits Jewishness, or is it the act of gestation and parturition that makes a child Jewish? Contemporary rabbis have debated these questions intensely and needless to say, there is much disagreement over proper interpretive strategies in the face of these unprecedented technological developments. Rabbinic rulings on these matters are of direct importance to Jews undergoing infertility treatment since certain kinds of infertility can only be treated with the use of sperm and/or eggs donated by a third party. Unfortunately for those looking for rabbinic guidance on these matters, there are conflicting rabbinic opinions as to whether it is the egg or the womb which determines Jewishness. Some rabbis argue that the act of gestation and parturition determines Jewishness, and those who wish to conceive a Jewish child may do so using eggs donated by non-Jewish women. Others argue the opposing view, that the egg transmits Jewishness, so in order to conceive a Jewish child, an infertile woman must receive an egg donated by a Jewish woman. By designating the egg as that which confers Jewishness, rabbis holding the latter opinion imbue genetic material with the powerful ability to create Jewish identity. This rabbinic designation has specific repercussions.¹⁸

For example, a program in New York was recently created to help infertile couples acquire Jewish donor eggs, commodities that for various socioeconomic factors are otherwise very scarce. As part of this program, young, unmarried Israeli Jewish women are flown to New York, their ovaries are hormonally hyper-stimulated, and their ova are surgically

extracted for donation. All trip expenses are provided and each young woman receives compensation in the amount of \$8,000. Interestingly, it is not only the Jewishness of these young women's eggs that is at a premium here, but also the fact that they are donating their eggs while unmarried that makes them particularly desirable. For eggs donated by unmarried Jewish women are much in demand, especially by infertile orthodox Jewish couples who only undergo fertility treatment in strict accordance with rabbinic directives. For these couples, there are additional Halakhic complications involved in using donated eggs, since some rabbis have expressed concern about the use of third-party donor material that is introduced into the marital relationship between a husband and wife. Among these concerns is that a child conceived using the husband's sperm and a donated egg that comes from a married Jewish woman who is not his wife could be considered a *mamzer* — a child conceived in an illegitimate act of sexual intercourse — since it was conceived in a union that if actualized physically, rather than technologically, would be considered adulterous according to Jewish law. In other words, if a married Jewish woman has sex with a Jewish man who is not her husband, a child born of such a relationship would be designated a *mamzer* and subject to a severe stigma in the orthodox world. By extension, if an egg donated by a married Jewish woman is fertilized by the sperm of a Jewish man who is not her husband, the resulting child could be considered a *mamzer* as well. In order to circumvent this concern, rabbis make it clear that the egg of an unmarried Jewish woman is preferred for donation, since if a married Jewish man conceives a child with an unmarried Jewish woman, there are no adulterous connotations, and the child is born free from the stigma of *mamzerut*. According to this way of thinking, the egg embodies not only the Jewishness of the woman from whom it is issued, but her marital status as well. These strains of rabbinic thought seem to indicate that genetic material is capable of embodying different kinds of identity, both religious and temporal.

I have explored the various social implications intrinsic to Halakhic debates concerning the appropriate uses of reproductive technology elsewhere.¹⁹ Here, I simply want to highlight how the rabbinic conceptualization of the egg as the origin of Jewishness is foundational to entrepreneurial efforts like this program that brings unmarried Israeli Jewish women to the United States for ova harvesting. For it is the designation of the egg as the origin of Jewishness that lies at the base of such elaborate effort. This rabbinic strain of thinking about donor eggs is reinforced in a related practice,

when infertile Jewish couples seek out Jewish donor eggs directly by advertising for them in college newspapers or on the internet. These ads often promise up to \$50,000 in compensation for Jewish egg donors. Clearly, popular Jewish beliefs about the meaning and power of eggs to transmit Jewishness also shape the market for Jewish donor eggs.

Although they take place under extreme circumstances, high payments and transnational egg flights suggest that the belief in Jewish genes is not an abstract notion. Rather it is a deeply held conviction, based on explicit rabbinic rulings, worth paying a premium for, and sufficient to justify elaborate networks of transnational exchange and medical intervention.²⁰

V. Conclusions

Jewish genes operate as different units of analysis in each of these three discursive domains — population genetics, medical genetics and rabbinic discourse on reproductive technology. For the population geneticist, Jews are a social category, who, as descendants of a relatively homogenous ancestral group, embody statistical probabilities that DNA haplotypes will be more prevalent within this group. For purposes of genetic screening, individual genes are nominally designated as “Jewish” if they carry genetic mutations statistically more common among Jews. This correlation between individual Jews and genetic mutations that are more common among Jews can lead to an easy conceptual slippage, where genes are mistakenly identified as Jewish. For many contemporary rabbinic decisors, the egg is the essential locus of Jewishness, an identification that has triggered elaborate schemes and high prices for its acquisition.

No wonder the boundaries between these discursive domains begin to lose definition as the meanings of genes travel conceptually between them. The basic question here is: if genes seem to be demonstrably Jewish in one domain, how can they not be Jewish in all domains? How can the convincing conjectures generated by population geneticists about the migratory and mating patterns of Jewish communities in the past not suggest that Jewishness has somehow been preserved in DNA? How can the empirical uses of genetic screening to prevent genetic disease among Jews not be evidence of Jewishness as some kind of irreducible genetic category? How can rabbinic designation of, and widespread popular belief in, the human egg as the origin of Jewishness not be reckoned with, particularly since rabbinic authority has determined who is a Jew for centuries? And yet each of these domains constructs the gene in quite different terms.

This confusion creates what anthropologist Victor Turner called a liminal disorder.²¹ Such a state is created when concepts are in transition and turmoil, en route to further elucidation and definition. This ambiguity is amplified when juxtaposed with the profound conceptual tension that has always existed about the biological basis for Jewishness. The question here is whether this contemporary taxonomic chaos is sufficient to create a newly reordered Jewish identity that is being explicitly configured in genetic terms. If genetic material is imagined to be a manifestation of some kind of essentialized ethno-religious self, it would seem to be reminiscent of the racial categorizations developed during an earlier genetic age. But unlike

the past, this is not state-sponsored eugenics that seeks to identify Jewish genes in order to control or limit Jewish reproduction. Jews are not coerced to believe in an essentialized genetic self, to endorse Jewish population genetics, to create elaborate infrastructures to study and screen for genetic diseases that use Jewishness as an organizing category, or to launch flights in order to harvest Jewish eggs. On the contrary, Jews themselves have generated these activities. Indeed, Jews have exhibited a kind of hyper-agency when it comes to embracing new genetic technologies. But how long can this embrace be sustained without reckoning with the conceptual ambiguities and social repercussions it intrinsically engenders?

We already see some evidence of new Jewish social forms emerging from the uses of these technologies. In the case of Dor Yeshorim, marital patterns have shifted to a material base that is configured in terms of genetic compatibility. The routinization of prenatal genetic screening is evidence of a different new social form, where biomedical intervention seems to have become an inevitable part of reproduction for an increasing number of Jews, infertile or not. Certainly, the transnational egg donation program represents another novel social development that has emerged in direct response to these technologies.

Despite the fact that bioethicists have sounded every conceivable caution about the social and political dangers of conceptualizing Jewishness in genetically essentialized terms, and despite the fact that anthropologists have argued for decades that identity is socially constructed, contemporary Jews seem to be finding the concept of the Jewish gene irresistible. Indeed, Moshe Halbertal's articulation of the prominent strand in Jewish philosophy which argues against a biological basis for Jewishness may be undergoing its most profound challenge to date. And while it is unlikely that Jewish identity will end up fixed in genetic terms, it can't help but be profoundly reordered in the new genetic age.

NOTES

- 1 Michael Walzer, Menachem Lorberbaum, Noam J. Zohar, Ari Ackerman, eds., *The Jewish Political Tradition, Volume Two: Membership* (New Haven and London: Yale University Press, 2003).
- 2 Moshe Halbertal, "Commentary, the Last Judgment — a Talmudic Account," in *The Jewish Political Tradition, Volume Two: Membership*, ed. Walzer, Lorberbaum, Zohar, Ackerman (New Haven and London: Yale University Press, 2003), p. 28.
- 3 Todd M. Endelman, "Anglo-Jewish Scientists and the Science of Race," *Jewish Social Studies* 11 (1): 52-92 (2004).
- 4 Eliezer Ben-Rafael, *Jewish Identities: Fifty Intellectuals Answer Ben Gurion* (Leiden, Boston, Koln: Brill Academic Publishers, 2002).
- 5 Michael F. Hammer, Karl Skorecki, Sara Selig, Shraga Blazer, Bruce Rappaport, Robert Bradman, Neil Bradman, P.J. Waburton, Monic Ismajlowicz. "Y Chromosomes of Jewish Priests." *Nature* 385:2, January (1997).
- 6 A haplotype is a set of closely linked DNA polymorphisms inherited as a unit.
- 7 Ariella Oppenheim, et al. "The Y Chromosome Pool of Jews as Part of the Genetic Landscape of the Middle East," *The American Journal of Human Genetics* 69:5 (2001).
- 8 M.G. Thomas, M.E. Weale, A.L. Jones, M. Richards, A. Smith, N. Redhead, A. Torroni, R. Scozzari, F. Gratrix, A. Tarekegn, J.F. Wilson, C. Capelli, N. Bradman, and D.B. Goldstein, "Founding mothers of Jewish communities: Geographically separated Jewish groups were independently founded by very few female ancestors," *American Journal of Human Genetics* 70:1411-1420 (2002).
- 9 Carl Elliott and Paul Brodwin, "Identity and Genetic Ancestry Tracing," *British Medical Journal* 325 (21-28 December 2002): 1469-1471 (Reprinted in *BMJ-USA* 3, April 2003: 225-227).
- 10 M.G. Thomas, T. Parfitt, D.A. Weiss, K. Skorecki, J.F. Wilson, M. le Roux, N. Bradman, D.B. Goldstein, "Y Chromosomes traveling south: the cohen modal haplotype and the origins of the Lemba — the "Black Jews of Southern Africa," *American Journal of Human Genetics* 66 (2): 674-86 (2000).
- 11 Hillel Halkin. *Across the Sabbath River: In Search of A Lost Tribe of Israel* (New York: Houghton Mifflin, 2002).

- 12 Interestingly, the Kuki Chin Mizo resisted DNA testing undertaken to determine if there was a genetic connection between them and world Jewry. "Rabbi Shimon Gangte, a Bnei Menashe leader who has lived in Israel for eight years and teaches Torah at a yeshiva (religious school) on the West Bank, argues that the thousands of Ethiopian Jews who emigrated to Israel did not have to undergo DNA tests. He said: 'Over a number of years, Jewish blood has mixed with non-Jewish blood in our community. So would the DNA test show that we are Jewish? Maybe not. So are people then going to say that we are not Jewish and dash the hopes of the rest of the community to move here? Even if it is not proven according to a DNA test, we feel Jewish and we will still be Jewish.'" <http://portal.telegraph.co.uk/news/main.jhtml?xml=%2Fnews%2F2002%2F11%2F10%2Fwtribe10.xml>

Ultimately, genetic tests were conducted on the Kuki Chin Mizo with interesting results. "On the one hand, no connection was found on the male side of the genetic chain (the Y chromosome) between the genetic profile of the Kuki and the Jewish profile, or the profile of Middle Eastern peoples in general. However, on the female side of the profile (what scientists call mitochondrial DNA) there is a certain resemblance to the genetic profile of Middle Eastern peoples and to that of the Jews of Uzbekistan (who also have a tradition of belonging to the 10 tribes) — a closeness that distinguishes the Kuki from the members of other tribes that live nearby." Yair Sheleg, "In Search of Jewish Chromosomes in India," *Ha'aretz*, April 1, 2004.

- 13 Such tests are not only appealing to Jews. For example, the "Family DNA" company has found enthusiastic consumers amongst the African-American population eager to locate their place of origin in Africa. See Amy Harmon, "Blacks Pin Hope on DNA to Fill Slavery's Gaps in Family Trees," *New York Times*, July 25, 2005.
- 14 Daphna Birnbaum-Carmeli, "Prevalence of Jews as Subjects in Genetic Research: Figures, Explanation and Potential Implications," *American Journal of Medical Genetics* 9999:1-8 (2003).
- 15 B.P. Fuller, M.J. Kahn, P.A. Barr, L. Biesecker, E. Crowley, J. Garber, M.K. Mansoura, P. Murphy, J. Murray, J. Phillips, K. Rothenberg, M. Rothstein, J. Stopfer, G. Swergold, B. Weber, F.K. Collins, K.L.

- Hudson. "Privacy in genetics research," *Science* Aug 27; 285 (5432): 1359-1361 (1999).
- 16 Sally Lehrman, "Jewish Leaders Seek Genetic Guidelines," *Nature* 389: 322 (1997); Meredith Waldman, "Jewish Leaders Meet NIH Chief on Stigmatization Fears," *Nature* 392: 851 (1998).
- 17 Margaret Lock, "Breast Cancer: Reading the Omens," *Anthropology Today* 14:4 (1998).
- 18 Susan Martha Kahn, *Reproducing Jews: A Cultural Account of Assisted Conception in Israel* (Durham and London: Duke University Press, 2000).
- 19 Ibid.
- 20 Certainly, ascribing identity to reproductive genetic material is not unique to infertile Jews in search of Jewish donor eggs. In this country, where reproductive genetic material is arbitrated in a market context, donor eggs and sperm are routinely categorized according to the nationality, religion, ethnicity, and physical traits of the donor. Individual consumers expect to be able to choose their sperm and eggs based on presumed phenotypic attributes and other less tangible variables that they deem important. In other words, it is not unusual in this context for people to choose donor material that they perceive to be "like" themselves, either in terms of appearance, ethnicity, national origin or even shared interests.
- 21 Victor Turner, *From Ritual to Theatre: the Human Seriousness of Play* (New York: PAJ Publications, 1982).